

The Effect of Massage Therapy on Thoracic Range of Motion and Golf Swing Speed: A Pilot Study

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Introduction

The golf swing is a complex movement that requires both power and flexibility. From the backswing through the follow-through, there are many points where restriction in soft tissue can limit range of motion and therefore limit momentum during the swing. Decreased momentum can result in decreased swing speed. Decreased swing speed results in decreased distance; something a golfer does not want.

The biomechanics and physics of the golf swing illustrate that torque is essential in creating angular acceleration, speed, and therefore power. There are many options available to golfers to increase their swing speed. Exercises designed specifically for the golf swing, yoga for golfers, learning new swing techniques such as "delayed hand release," and custom training, to name a few.

Although many therapists work with golfers on a regular basis for back pain or to improve their golf score, there has been little investigation into how massage therapy may be able to improve golf swing speed.

Objective

Clinical experience has shown that massage therapy, and specifically neuromuscular treatment to the thoracic rotators, can increase thoracic range of motion. Increasing thoracic rotation could theoretically increase torque and therefore could increase golf swing speed. The purpose of this pilot study was to investigate what effects massage therapy has on thoracic range of motion and golf swing speed.

Our primary objective was to understand how massage therapy could be used in a clinical setting with golfers. Using this approach, we could determine whether massage therapists had the tools to go beyond dealing with golfer's low back pain, but also to improving performance on the golf course.

Method

Study Design

An interventional study design was used with 51 subjects (f=11, m=40). All golfers were amateur golfers recruited from local golf clubs and fitness centers. Four therapists were instructed how to treat the thoracic rotators with neuromuscular techniques. A supervising therapist oversaw the instruction and treatment. A standard 12 inch goniometer was used to measure range of motion.

Procedure

- Measure 5 golf swings for average speed using a radar gun
- Measure pre-treatment thoracic range of motion (see figure)
- Treat thoracic rotators bilaterally using neuromuscular techniques for 15 minutes. The therapists focused on releasing restricted tissue and trigger points.
- Remeasure thoracic range of motion
- Remeasure 5 golf swings for average speed

Muscles Treated

- Internal Oblique
- External Oblique
- Serratus Posterior Inferior
- Serratus Posterior Superior
- Intercostals
- Levator Costorum



Right: Measuring thoracic range of motion using a 12 inch goniometer



Left: Treatment of the left rotatores with digital compression

Results

Thoracic Range of Motion

Post-treatment thoracic range of motion saw an average increase of 12.02 degrees +/- 1.65 from pre-treatment range of motion. Interestingly when looking at "restricted" (<45 degrees) range of motion the increase was on average larger: 15.13 degrees +/- 2.84

Golf Swing Speed

Post-treatment swing speed was, on average, 4.34 miles per hour +/- 1.19 higher than pre-treatment swing speeds. Again, those golfers who were restricted had a higher increase: 6.00 miles per hour +/- 2.33.

Statistical Analysis

Using SPSS software, we were able to determine that treatment significantly affected golf swing speed. We also found that treatment effected thoracic range of motion. Interestingly we could not find a correlation between increased thoracic range of motion and increased golf swing speed ($p=.07$). Similarly, and also puzzling, was the fact that no correlation could be found in pre-swing thoracic range of motion and golf swing speed ($p=.91$).

Conclusions

From a clinical perspective, the findings from this pilot study are important. Thoracic range of motion goes beyond the ability to swing a golf club quickly and would be helpful to any manual therapist concerned with thoracic restrictions or pain in the musculature responsible for rotation. Specifically, for those clients who have severe restriction, treatment to the thoracic rotators may create improvement in rotation and thus function. Limited thoracic range of motion can have detrimental effects on many daily movements. Improving those movements can improve the quality of life for the therapist's client. The results may also be of assistance to other athletes who rely on good thoracic range of motion for elite performance.

For therapists with clients who golf, the study indicates that a short treatment could possibly have significant effects on their performance. The fact that these neuromuscular techniques have no adverse effects offers a harmless approach to

improving golf swing speed. For golfers who have tried other modalities to improve golf swing, neuromuscular therapy may provide another tool to achieve desired results.

Limitations and Looking Ahead

This pilot study demonstrated that neuromuscular therapy can have positive effects on both thoracic range of motion and golf swing speed, but questions still remain regarding the relationship between thoracic range of motion and golf swing speed. The theoretical physics behind the golf swing suggest that the statistical insignificance does not explain the big picture.

A control group is essential to tease out the real impact that treatment has on range of motion and golf swing speed. A future project that includes other modalities in multiple treatment groups would provide therapists with insight into best practices.

Other musculature is also very important in the complex movement of the golf swing. This project analyzed thoracic range of motion, but hip range of motion is also very important in both the backswing and follow-through. Because the feet are planted and the player torques to move the club back and forward both the internal and external rotators of the hip are important in creating power. Perhaps restrictions in the hip rotators (especially the external rotators) would limit torque and therefore golf swing speed. The authors have begun another pilot study project to look into the effects of the hip on golf swing speed.

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